What is claimed is:

1. A method of manufacturing fine particles including metallic particles, ceramic particles, glass particles or composite particles, comprising the steps of:

supplying particle-forming reactants into a flame formed in a burner;

generating particle nuclei from the reactants, which form aggregates by colliding with each other in the flame; and

irradiating at least one laser beam into the aggregates in the flame so that the temperature of the aggregates rapidly increases and the aggregates are fused and sintered into fine particles in the flame.

2. The method according to claim 1, wherein the wavelength of the laser beam is close to the main absorption wavelength band of the particles generated in the flame.

3. A method for depositing fine particles including metallic particles, ceramic particles, glass particles or composite particles on a target preform, the method comprising the steps of:

supplying particle-forming reactants into a flame formed in a burner;

generating particle nuclei from the reactants, which form aggregates by colliding with each other in the flame;

irradiating at least one laser beam into the aggregates in the flame so that the temperature of the aggregates rapidly increases and the aggregates are fused and sintered into fine particles in the flame; and

adhering the sintered particles to the preform to be deposited thereon.